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***Giesinger I, Buajitti E, Siddiqi A, Smith PM, Krishnan RG, and Rosella LC. The association between total social exposure and incident multimorbidity: a population-based cohort study. *SSM - Population Health*. 2025; 29:101743.**

<https://doi.org/10.1016/j.ssmph.2024.101743> [open access]

Abstract: Background: Multimorbidity, the co-occurrence of two or more chronic conditions, is associated with the social determinants of health. Using comprehensive linked population-representative data, we sought to understand the combined effect of multiple social determinants on multimorbidity incidence in Ontario, Canada. Methods: Ontario respondents aged 20-55 in 2001-2011 cycles of the Canadian Community Health Survey were linked to administrative health data ascertain multimorbidity status until 2022. Additive total social exposure (TSE) was generated by summing 12 measures of social disadvantage captured from the survey. Weighted-additive TSE included 15 measures of social disadvantage summed across 5 equally weighted domains. Hazard ratios for the association between each TSE measure and multimorbidity were estimated using competing risk Cox-proportional hazards models. All analyses were sex-stratified. Results: Both additive and weighted-additive TSE were associated with an increased risk of multimorbidity among females and males. A social gradient was observed for multimorbidity risk in all models. While adjusted models were attenuated, an increased risk of multimorbidity was observed among those experiencing the most social disadvantage, compared to those with the least social disadvantage in additive (HR Females = 2.16; 95%CI = 1.63, 2.86; HR Males = 1.90; 95%CI = 1.52, 2.38) and weighted-additive (HR Females = 1.94; 95%CI = 1.49, 2.53; HR Males = 1.72; 95%CI = 1.41, 2.10) models. The observed social gradient was retained. Conclusions: These findings demonstrate the importance of considering the cumulative effects of multiple social determinants of health on multimorbidity.

***Kokorelias KM, Rittenberg N, Scali O, Smith-Bayley S, Gignac MAM, Naglie G, et al. A scoping review to examine health care professionals' experiences as family caregivers. PLoS ONE. 2025; 20(1):e0308657.**

<https://doi.org/10.1371/journal.pone.0308657>

Abstract: BACKGROUND: Health and social care systems must confront the challenge of supporting a growing elderly population and their caregivers. Family caregivers who are healthcare professionals are part of this context, but their caregiving experiences remain unclear. OBJECTIVE: This scoping review explored the experiences of healthcare professionals who are also family caregivers for older adults. METHODOLOGY: A scoping review methodology identified and summarized pertinent studies. Searches were conducted in Medline, Embase, PsycINFO, CINAHL, and AgeLine. We sought articles published from each journals' inception to October 19, 2023. Inclusion criteria were English-language studies about healthcare professionals caring for older adult family members. Diverse research designs were included. Data were extracted and synthesized according to key themes. RESULTS: The review included 19 studies, highlighting four themes. Studies were published between 1994 and 2019, with most studies published before 2017. The overarching theme was "Expectations," where healthcare professional family caregivers faced multifaceted expectations from themselves, their families, and the healthcare system. Expectations also highlights the dual role of participants as both caregivers and healthcare professionals. This complex interplay led to a theme related to personal consequences, including stress, guilt, and potential burnout, but also positive aspects of the dual roles. Studies described how dual roles could enhance the quality-of-care healthcare professional caregivers provided to their family members. Finally, support needs were identified, emphasizing the importance of workplace accommodations and support from the healthcare system and peers. CONCLUSIONS: The experiences of healthcare professional family caregivers are shaped by unique expectations, resulting in both positive and negative consequences. The support needs of this group are multifaceted, requiring workplace accommodations and tailored support within the healthcare system. Further research is needed to delve deeper into the nuances of their experiences and develop targeted interventions to alleviate the stress and challenges they face in their dual roles. Understanding the evolving needs of healthcare professional family caregivers over time can inform support strategies along the caregiving trajectory

Bolt EET, Ali M, and Winterton J. Why nurses quit: job demands, leadership and voluntary nurse turnover in adult care in the Netherlands. Social Science & Medicine. 2025; 365:117550.

<https://doi.org/10.1016/j.socscimed.2024.117550> [open access]

Abstract: Nurse turnover is a prominent issue in Dutch healthcare, causing staff shortages and operational disruptions. The literature reports myriad factors triggering nurse turnover, but little attention is given to how motives arise at multiple organizational levels and whether these affect distinct groups of nurses differently. Using qualitative and exploratory methods, we examine motives at multiple levels and for distinct nurse categories. We apply thematic and cluster analysis to motives from semi-structured interviews conducted between 2019 and 2020 with 56 nurses who left a healthcare employer but continued working in adult care in the Netherlands. We provide an empirical nuance to understanding and analysing motives by differentiating between all motives reported by each participant and the single most important motive: reported most responsible for their turnover decision. Our exploratory analysis suggests heterogeneity among nurses in their expressed multi-level and multifaceted motives. A universal theoretical model is, therefore, unlikely to explain and predict

nurse turnover. Job-demands resources theory and leader-member exchange theory appear most relevant in explaining multi-level and multifaceted motives for two distinct groups of nurses. The most important motives explained by job-demands resources theory are hierarchy and structural changes. The most important motives explained by leader-member exchange theory include increased workload and not being listened to by leaders. Our study has significant managerial and policy implications, highlighting the need to develop different retention strategies tailored to distinct groups of nurses characterized by their expressed motives. The most important motives are within the control of the organization, suggesting scope for healthcare organizations to address nurse turnover more effectively

Conway PM, Erlangsen A, Grynderup MB, Clausen T, Bjorner JB, Burr H, et al. Self-reported workplace bullying and subsequent risk of diagnosed mental disorders and psychotropic drug prescriptions: a register-based prospective cohort study of 75,252 participants. *Journal of Affective Disorders*. 2025; 369:1-7.

<https://doi.org/10.1016/j.jad.2024.09.134>

Abstract: Background: Evidence concerning workplace bullying as a risk factor for mental disorders is currently limited to depressive disorders and mainly based on non-clinical assessments. This study aims to examine the prospective association of self-reported workplace bullying with different types of register-based hospital-diagnosed mental disorders and redeemed psychotropic drug prescriptions. **Methods:** Using a cohort study design, we examined a pooled dataset of 75,252 participants from 14 questionnaire-based surveys conducted between 2004 and 2014. In the questionnaires, workplace bullying was measured by a single item. The questionnaires were linked to Danish registers on hospital-diagnosed mental disorders and redeemed psychotropic drug prescriptions up to 2016. Data were analysed by multivariate Cox proportional hazard models, including only participants without a history of mental disorders or prescriptions since 1995. **Results:** After adjustment for sex, age, marital and socio-economic status, workplace bullying was associated with an excess risk of any mental disorder (HR 1.37; 95 % CI: 1.17-1.59) as well as mood disorders and neurotic, stress-related, and somatoform disorders. In stratified analyses, this association were statistically significant only among women. Workplace bullying was also associated with any psychotropic drug prescription (fully-adjusted HR 1.43; 95 % CI: 1.35-1.53). This association was observed in both sexes and for all prescriptions, including anxiolytics, hypnotics and sedatives, antidepressants, and nootropics. **Limitations:** Firm conclusions about sex-related differences cannot be drawn. Residual confounding by unmeasured factors such as personality cannot be ruled out. **Conclusions:** Workplace bullying was associated with higher risks of diagnosed mental disorders among women and psychotropic drug prescriptions in both sexes.

Dao-Tran TH, Townsend K, Loudoun R, Wilkinson A, and Seib C. Associations between employees' alcohol consumption, insomnia and HR management strength. *Occupational Medicine*. 2025; 74(9):647-653.

<https://doi.org/10.1093/occmed/kqae100> [open access]

Abstract: BACKGROUND: Understanding of hazardous alcohol drinking and insomnia among Australian ambulance personnel is limited. Australian ambulance organizations have strengthened their organizational human resource management (HRM) to promote their employees' healthy lifestyles, health and well-being. **AIMS:** To describe the prevalence of hazardous alcohol consumption

and insomnia among Australian ambulance personnel and to explore their associations with the organizational HRM strength. **METHODS:** This cross-sectional study was conducted on 492 ambulance personnel randomly selected from three Australian states. The Alcohol Use Disorders tool, The Insomnia Severity Index and the Perceived HRM System Strength instrument measured alcohol consumption, insomnia and HRM strength. Descriptive analyses, bivariate association analyses and general linear models were used for data analysis. **RESULTS:** Twenty per cent of Australian ambulance personnel consumed alcohol at a hazardous level and 68% experienced clinically significant insomnia. There was no significant association between organizational HRM strength and ambulance personnel's hazardous alcohol consumption. There was a significant association between organizational HRM strength (consensus) and ambulance personnel's insomnia experience. **CONCLUSIONS:** Hazardous alcohol consumption and insomnia were concerns among Australian ambulance personnel. Even though strengthening the HRM system might reduce their experience of insomnia, simply strengthening the HRM system could not reduce their hazardous alcohol consumption

Galarneau JM, Beach J, and Cherry N. Respiratory ill-health and welding exposures: a Canadian cohort study. American Journal of Industrial Medicine. 2025; 68(2):99-111.

<https://doi.org/10.1002/ajim.23678> [open access]

Abstract: Introduction: Respiratory ill-health in welders is well documented but without a clear indication of exposures responsible. Methods: In a Canadian cohort study of welders and electrical workers, we collected self-reports of asthma/wheeze and rhinitis at each 6-monthly contact for up to 5 years. Physician diagnoses of asthma and chronic obstructive pulmonary disease (COPD/bronchitis) were extracted from the Alberta administrative health database (AHDB). Welders provided task-specific information at each contact. Estimates were derived for cumulative exposure to particulates, chromium, and nickel. Factors associated with time to first and recurrent events were identified by proportional hazards regression, adjusting for sex, age, and smoking. Results: Of 1001 welders and 884 workers in electrical trades recruited, 1338 in Alberta were matched to the AHDB. Welders were more at risk of physician-diagnosed COPD/bronchitis than those in the electrical trades (HR for first report = 1.87; 95% CI = 1.27-2.77) but not of asthma. Times to first self-report of asthma/wheezing (HR = 1.58; 95% CI = 1.23-2.04) and rhinitis (HR = 1.29; 95%CI = 1.11-1.49) were shorter in welders. Among welders, time to physician-diagnosed asthma was weakly related to cumulative nickel exposure (mg/m³_h/100) (HR = 1.08; 95% CI = 1.00-1.17). COPD/bronchitis was related to cumulative exposure to total dust (g/m³_h) (HR = 1.01; 95% CI = 1.00-1.03) and to chromium (mg/m³_h/100) (HR = 1.14; 95% CI = 1.04-1.26). The risk of both asthma and COPD/bronchitis reduced with time using local exhaust ventilation. Self-reported rhinitis increased with cumulative nickel exposure (HR = 1.00; 95% CI = 1.00-1.01). Conclusions: Welders were at increased risk of COPD/bronchitis, with risk related to cumulative dust and chromium exposure. Nickel exposure increased the risk of asthma and rhinitis.

Haas A, Martino SC, Haviland AM, Beckett MK, Dembosky JW, Binion J, et al. Consistency in self-reported race-and-ethnicity over time: implications for improving the accuracy of imputations and making the best use of self-report. Medical Care. 2025; 63(2):106-110.

<https://doi.org/10.1097/MLR.0000000000002090>

Abstract: BACKGROUND: Medicare Bayesian Improved Surname and Geocoding (MBISG), which augments an imperfect race-and-ethnicity administrative variable to estimate probabilities that

people would self-identify as being in each of 6 mutually exclusive racial-and-ethnic groups, performs very well for Asian American and Native Hawaiian/Pacific Islander (AA&NHPI), Black, Hispanic, and White race-and-ethnicity, somewhat less well for American Indian/Alaska Native (AI/AN), and much less well for Multiracial race-and-ethnicity. OBJECTIVES: To assess whether temporal inconsistency of self-reported race-and-ethnicity might limit improvements in approaches like MBISG. METHODS: Using the Medicare Health Outcomes Survey (HOS) baseline (2013-2018) and 2-year follow-up data (2015-2020), we evaluate the consistency of self-reported race-and-ethnicity coded 2 ways: the 6 mutually exclusive MBISG categories and individual endorsements of each racial-and-ethnic group. We compare the consistency of self-reported race-and-ethnicity (HOS) to the accuracy of MBISG (using 2021 Medicare Consumer Assessment of Healthcare Providers and Systems data). RESULTS: Concordance (C-statistic) of HOS baseline and follow-up self-reported race-and-ethnicity was 0.95-0.97 for AA&NHPI, Black, Hispanic, and White, 0.83 for AI/AN, and 0.72 for Multiracial using mutually exclusive categories (weighted concordance=0.956). Concordance of MBISG with self-report followed a similar pattern and had similar values, with somewhat lower AI/AN and Multiracial values. The concordance of individual endorsements over time was somewhat higher than for classification (weighted concordance=0.975). CONCLUSIONS: The concordance of MBISG with self-reported race-and-ethnicity appears to be limited by the consistency of self-report for some racial-and-ethnic groups when employing the 6-mutually-exclusive category approach. The use of individual endorsements can improve the consistency of self-reported data. Reconfiguring algorithms such as MBISG in this form could improve its overall performance

Hartung DM, El Ibrahim S, Livingston CJ, Charlesworth CJ, McConnell KJ, and Choo EK. Chronic opioid use after implementation of Oregon's Medicaid back pain policy. *American Journal of Preventive Medicine*. 2025; 68(2):272-280.

<https://doi.org/10.1016/j.amepre.2024.10.004>

Abstract: INTRODUCTION: In 2016, Oregon developed an innovative policy to improve care for Medicaid patients with back pain. The objective of this study was to identify the factors associated with dose reduction and discontinuation among Medicaid patients using chronic opioid therapy after implementation of this policy. METHODS: Using Medicaid administrative claims data, this was a retrospective cohort of patients on chronic stable opioid therapy between July and December 2016. Outcomes assessed were (1) 30% reduction in opioid dose and (2) an absolute discontinuation between January and December 2017. Multivariable logistic regressions evaluated the association between dose reduction outcomes and clinical and demographic factors. RESULTS: Of 4,643 Medicaid patients on chronic opioid therapy, 3,853 (83%) had a dose reduction, and 651 (14%) discontinued opioids; patients with back pain were more likely to have a dose reduction (AOR=1.19; 95% CI=1.01, 1.41). Factors associated with discontinuation included having a mental health diagnosis (AOR=1.30; 95% CI=1.08, 1.56), substance use disorder (AOR=1.90; 95% CI=1.41, 2.56), opioid use disorder (AOR=1.55; 95% CI=1.21, 1.99), and receipt of buprenorphine (AOR=2.82; 95% CI=1.30, 6.15). Discontinuation was less likely in Black patients (AOR=0.50; 95% CI=0.29, 0.85), in older age groups, and in those with a higher opioid dose at baseline. CONCLUSIONS: Most Medicaid beneficiaries had a dose reduction after implementation of Oregon's back pain policy. Opioid discontinuation was associated with factors that suggest that providers pursue this strategy for patients at higher overdose risk

Lai J, Li X, Liu W, Liufu Q, and Zhong C. Global, regional and national burdens of occupational injuries, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Injury Prevention*. 2025; 31(1):52-59.

<https://doi.org/10.1136/ip-2023-045149>

Abstract: OBJECTIVES: Occupational injuries pose a significant challenge to global health and development. This study aimed to quantify the international and regional burdens of occupational injuries from 1990 to 2019, stratified by specific causes. METHODS: We analysed global trends in deaths, disability-adjusted life years (DALYs), age-standardised mortality rates (ASMR) and age-standardised DALY rates (ASDR) related to occupational injuries. Specific injuries, including animal contact, drowning, mechanical forces, falls, fire, heat, hot substances, foreign bodies, poisoning and road injuries, were evaluated. Age-stratified and regional analyses were also performed. RESULTS: Globally, the number of deaths, DALYs, ASMR and ASDR related to occupational injuries declined from 1990 to 2019. The middle Socio-demographic Index (SDI) region exhibited the highest burden, whereas the high SDI region showed the least burden. China and India had the highest occupational injury-related death rates in 2019. Males, particularly those aged 25-44 years, were found to be more vulnerable. Road injuries were the leading cause of death in all age groups. Compared with 1990, mortality numbers and rates decreased significantly by 2019, with the highest burdens experienced in East Asia, South Asia and Southeast Asia. CONCLUSION: The global decline in occupational injuries is promising; however, certain regions and demographics remain disproportionately affected. Targeted interventions in high-burden areas are crucial to further reduce the impact of occupational injuries

Logdal N, Svensson S, Jackson J, Mathiassen SE, Bergstrom G, and Hallman DM. Do job demands and resources differ between permanent and temporary eldercare workers in Sweden? *Annals of Work Exposures and Health*. 2025; 69(1):71-80.

<https://doi.org/10.1093/annweh/wxae077> [open access]

Abstract: INTRODUCTION: Eldercare organizations face high sickness absence rates and staff turnover and rely heavily on temporary workers to fill staffing gaps. Temporary workers may experience differences in job demands and resources compared with permanent workers, but this has been largely understudied. OBJECTIVE: To compare perceived job demands and resources between permanent and temporary Swedish eldercare workers. METHODS: Permanent and temporary eldercare workers in a Swedish municipality were invited to answer a digital survey on work environment conditions. Differences between permanent and temporary workers in job demands and resources were analyzed using multivariate analysis of variance adjusted for age, sex, place of birth, and percent of full-time work and univariate analyses were conducted to consider differences in specific factors. RESULTS: A total of 1076 permanent and 675 temporary workers received the survey, and the final study sample included 451 permanent and 151 temporary workers. Multivariate analyses revealed that temporary workers reported statistically significant lower job demands compared to permanent workers, but no statistically significant differences in resources were found between the groups. Univariate analyses showed that temporary workers reported lower quantitative demands, perceived exertion, and time spent bending forward, than permanent workers. These data suggest comparable support across groups, but a higher workload among permanent workers. CONCLUSION: Our findings indicate that temporary workers experienced lower job demands than permanent workers, but that no notable difference was found in resources. Interventions aimed at

distributing job demands more evenly among eldercare workers with different employment forms may be necessary

Miller O, Dobson O, Casey T, and Newnam S. Work-related violence interventions in the disability sector: a systematic review and systems mapping exercise. *Safety Science*. 2025; 184:106765.

<https://doi.org/10.1016/j.ssci.2024.106765> [open access]

Abstract: Violence against staff is common in the healthcare sector, as are staff training interventions aiming to reduce work-related violence (WRV). However, limited research has explored the breadth of WRV interventions for staff working in the disability sector. Therefore, the current study aimed to systematically review WRV interventions for staff working in the disability sector using a systems thinking framework, PreventiMap, which is an adaption of Rasmussen's Risk Management framework. The goal of this research was to identify opportunities to support systemic change in the sector to support the safety of workers. Using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses approach, a comprehensive search strategy and eligibility criteria were applied across five databases. After screening, a total of 22 intervention studies were included for systematic review. Included studies were synthesised narratively and using the systems thinking PreventiMap technique. The efficacy of interventions was variable, as was the methodological quality of included studies. Most intervention studies (n = 20, 90.1 %) explored staff training, with very few (n = 4, 18.2 %) exploring management or company level WRV interventions. Therefore, it is recommended that organizations implement more holistic WRV interventions that address higher system levels and evaluate their effectiveness using more rigorous designs.

Murray M, Beckman S, Heinzerling A, Frederick M, Cummings KJ, Gandhi S, et al. Heat-related illness in California firefighters, 2001-2020. *American Journal of Industrial Medicine*. 2025; 68(2):184-193.

<https://doi.org/10.1002/ajim.23691> [open access]

Abstract: Background: Firefighters have a higher rate of heat-related illness (HRI) compared to other occupations. Given the changing climate, firefighters' risk of occupational HRI merits attention. Therefore, we aimed to identify demographic, temporal, and geographic risk factors associated with occupational HRI in California firefighters between 2001 and 2020. Methods: Within the California Workers' Compensation Information Systems (WCIS), we identified firefighters from 2001 to 2020 using industry and class codes and assigned occupation titles using the NIOSH Industry and Occupation Computerized Coding system (NIOCCS). HRI claims among firefighters were identified using International Classification of Diseases (ICD) Ninth or Tenth revision codes, WCIS nature and cause of injury codes, and keywords. We calculated HRI incidence rates adjusted by sex, age, year, and county. Estimates of California firefighter employment were obtained from the American Community Survey. Results: We identified 2185 firefighter HRI claims between 2001 and 2020 (305.5 claims/100,000 firefighters, 90% CI: 278.7-740.7). Firefighters aged 18 to 29 years had a statistically significant higher risk of HRI compared to those aged 40 to 49 years (rate ratio = 3.5, 90% CI: 3.1-3.9). The HRI rate increased over time, and the risk from 2016 to 2020 was 1.8 times higher than it was from 2001 to 2005 (90% CI: 1.7-1.9). Northern California counties, including Shasta (2313.9) and Sacramento (1772.1), had the highest HRI rates. Conclusions: Firefighters in certain demographic groups and northern California counties were at highest risk of HRI. With rising temperatures and larger wildfires, additional prevention efforts are needed to reduce HRI in California firefighters.

Sharifian N, LeardMann CA, Kolaja CA, Baccetti A, Carey FR, Castaneda SF, et al. Factors associated with mental healthcare utilization among United States military personnel with posttraumatic stress disorder or depression symptoms. *American Journal Preventive Medicine*. 2025; 68(2):289-299.

<https://doi.org/10.1016/j.amepre.2024.10.006> [open access]

Abstract: INTRODUCTION: Although posttraumatic stress disorder (PTSD) and depression are prominent mental health conditions affecting United States service members, only a subset of individuals with these conditions utilize mental healthcare services. Identifying factors associated with mental healthcare utilization may elucidate military subgroups with unmet mental healthcare needs. METHODS: Cross-sectional survey data from the 2019-2021 Millennium Cohort Study assessment were used to examine correlates of unmet mental healthcare needs among military personnel who screened positive for PTSD or depression symptoms (n=18,420) using modified Poisson regression models. Data analyses for this study were conducted between 2023 and 2024. RESULTS: Approximately 32%-43% of service members reported receiving any mental health care in the past 12 months. Hispanic and Asian or Pacific Islander personnel and those with certain service characteristics (higher pay grade, recent deployment, experienced discrimination) had a lower likelihood of mental healthcare utilization. Female sex, greater symptom severity, experiencing bullying, and other psychosocial factors were associated with greater likelihood of mental healthcare utilization. CONCLUSIONS: One third of service members with PTSD or depression symptoms reported any mental healthcare use, highlighting the need to identify factors that may impede or delay treatment. Racial and ethnic disparities in treatment utilization persist, as do differences in utilization by military characteristics. Further research and initiatives are necessary to identify potential service-specific or cultural barriers and provide equitable quality and access to needed mental health services within the Military Health System

Visona SD, Untalan M, Bertoglio B, Capella S, Belluso E, Billo M, et al. Asbestos burden in lungs of subjects deceased from mesothelioma who lived in proximity to an asbestos factory: a topographic post-mortem SEM-EDS study. *American Journal of Industrial Medicine*. 2025; 68(2):112-121.

<https://doi.org/10.1002/ajim.23680> [open access]

Abstract: Background: Asbestos exposure and its pathological consequences, especially malignant mesothelioma (MM) still represent a major public health problem on a global scale. After the ban of asbestos in most western countries, nonoccupational exposure plays an essential role in MM pathogenesis. However, few studies have quantified asbestos lung burden after environmental exposure. The main objective of this work is to understand if asbestos lung content is different between occupationally and environmentally exposed individuals, and if the distance between the subjects' residences and the source of exposure is significantly associated with the asbestos lung burden. Methods: In this retrospective, observational study we quantified, with analytical scanning electron microscopy, asbestos content in lungs of individuals deceased from MM between 2005 and 2019, who were exposed to asbestos (occupationally and/or environmentally) in Broni, a small town in northern Italy where an important asbestos-cement plant operated until 1993. Results: We analyzed asbestos lung content of 77 subjects. We found that the asbestos lung content in MM patients who lived around the asbestos factory was as high as that seen in occupationally exposed individuals; this holds true in residents up to 10 km radius from the factory. We found no significant associations between the residence duration/distance ratio and asbestos lung burden. Conclusions:

This study suggests that heavy asbestos pollution involves not only the area adjacent to the factory, but the entire town of Broni and the surroundings. This is alarming if we consider that most asbestos factories still active in some countries are located close to towns and dwellings.

Yu F, Liu J, Qu T, Zhao M, Wang J, Jiang S, et al. Shift work, thyroid function and liver function among subway workers. *Occupational Medicine*. 2025; 74(9):668-675.

<https://doi.org/10.1093/occmed/kqae111>

Abstract: Background: Shift work is associated with an increased risk of liver injury. However, whether and how shift work alters liver function remains unclear. Aims: This study aimed to investigate the associations between shift work and the liver function parameters, and further explore the mediating roles of thyroid function indicators. Methods: We conducted a cross-sectional study involving a convenience sample of 724 subway workers. Multivariate linear regression models were adopted to approximate the effect values for the associations of shift work with liver function parameters and thyroid function indicators. Mediation analyses were used to explore the roles of thyroid function indicators in the association between shift work and liver function parameters. Results: Shift work was associated with increased levels of alkaline phosphatase (ALP), total triiodothyronine (TT3) and free thyroxine (FT4) ($\beta = 6.309$, 95% confidence interval [CI] 2.739-9.879, $\beta = 0.328$, 95% CI 0.242-0.415 and $\beta = 2.913$, 95% CI 1.502-2.884, respectively). In stratification analysis, the positive association between shift work and TT3, FT3 and FT4 was more pronounced among people >30 years old. The increase in shift worker FT3 and aspartate transaminase levels was stronger among alcohol users. Mediation analysis showed that TT3 and FT4 mediated 39% and 29% of the associations between shift work and the increased level of ALP, respectively (all $P < 0.05$). Conclusions: The results suggest that shift work is associated with increased ALP levels of subway workers, which is partly mediated by the increase of TT3 and FT4 levels.

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